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DISEASES CAUSED BY NEMATODES

TYLENCHUS PRATENSIS DE MAN. ON TOBACCO, TOMATO AND STRAWBERRY

By G. Steiner, Senior Nematologist, Division of Nematology

Tylenchus pratensis is known as an important plant parasitic nema. The list of its host plants grows rapidly and it is undoubtedly very widely distributed in both temperate and tropical regions. Tylenchus pratensis is an endoparasitic form. Almost the whole life cycle is passed within the root tissues. The eggs are deposited and hatch there. Since the males are found mostly around the roots it is thought that copulation may take place outside the root tissue.

Tobacco plants affected by this parasite were received from Dr. S. G. Lehman of the North Carolina State College. Tobacco is a new host for the nema. The larger roots of these plants showed brown lesions and many of the smaller rootlets were dead and brown. The black root rot organism, Thielavia basicola, was not found, and since the nemas were abundant Dr. Lehman suspected a relationship between them and the disease. He also noticed that the nemas involved were apparently different from the root knot species, Caconema (Heterodera) radicicola. Tylenchus pratensis was found present in large numbers. As in all such cases, other nemas such as Aphelenchus avenae, Cephalobus spp., etc., were also found, but these forms are secondary

parasites. Unfortunately the symptoms produced by Tylenchus pratensis are not specific. The plants are retarded in growth, turn yellow, and are sometimes stunted. Dr. Lehman writes that growers complain that affected tobacco plants do not grow and have yellow leaves. In a later letter he states:

"Since I wrote you on July 22, I have found several other fields of tobacco showing this same root disease. At the time I wrote you I knew of two fields in Wake County, the county in which Raleigh is situated. Since then I have, without extensive search, found five fields in two adjoining counties, four in Nash County and one in Johnson County. One of the fields in Nash County contains about twelve acres. This is good tobacco land but the loss on this field will approximate one hundred dollars per acre. The plants are very uneven in growth and the majority of them show slight to extreme stunting. The lower leaves are turning yellow and becoming necrotic around the margins. The grower states that this tobacco has not grown as it should during the entire season, although he has made a special effort to stimulate growth. All summer it has shown a strong tendency to wilt, beginning about nine o'clock in the morning and extending through the heat of the day until late evening. The leaves come up at night but wilt down again on the succeeding day. Many of the fine rootlets are killed back for a long distance from the tips. On the larger roots isolated lesions of various sizes are evident. The color of these lesions is distinctly brown, not black, and no spores are present as is the case with the black root rot disease.

"The fields in which I have thus far found the disease to be at all prevalent have been in continuous tobacco for from three to fifteen years. I have tested the soil in several of these fields and have found it to be in all cases near the neutral point in acidity."

The tomato is another new host which may be added here. A small number of specimens of Tylenchus pratensis were found in some plants sent in by Mr. E. F. Guba of the Massachusetts Agricultural College.

On strawberry Tylenchus pratensis was first observed by Dr. N. A. Cobb in January 1929, on plants from Plant City, Florida. Recently some strawberry plants from Massachusetts, affected by the so-called "yellow" or "gold" disease thought to be a virus disease, were submitted by Mr. E. F. Guba. All these plants were infested by Tylenchus pratensis. Without claiming any relationship between this disease and the infestation by the nema, the possibility of such a connection should at least be kept in mind as a working hypothesis. The behavior of the disease symptoms -- the yellow or gold color disappearing later in the season, the plants turning green again -- does not exclude such a relationship.

CEREAL DISEASES

STEM RUST OF CEREALS

Reports from Wisconsin, southern Minnesota, and Iowa state that stem rust (Puccinia graminis) of wheat, barley, and oats was of very little importance this year.

Wisconsin: Very little on wheat and barley, less than usual on oats. Probably due to seasonal conditions and eradication of barberry. (R. E. Vaughan, July 25).

Minnesota: Traces in most fields of wheat, barley, and oats in southern Minnesota. (Sect. Plant Path., July 1).

Iowa: Stem rust came late due to a dry June. At harvest time both winter and spring wheat varieties showed considerable rust, but it was worse on spring wheat. The loss is negligible. Late seeded barley and late maturing varieties developed considerable stem rust during the forepart of July, especially those plants which were still green and succulent. The loss is only a trace. (R. H. Porter, July).

LEAF RUST OF WHEAT (PUCCINIA TRITICINA)

Wisconsin: Present everywhere. Causing loss in a few fields of late seeded grain. (R. E. Vaughan, July 25).

Minnesota: Leaf rust was unusually late in appearing this season and infection is not as heavy. (Section of Plant Pathology, July 1).

Iowa: Leaf rust, like stem rust came much later than common this season. Spring wheat was more severely infected than winter varieties. The loss is negligible. (R. H. Porter, July).

SCAB ON WHEAT AND BARLEY (GIBBERELLA SAUBINETII)

Wisconsin: Less than usual this year on wheat and barley. Too dry during head development. (R. E. Vaughan, July 25).

Iowa: Prevalent this year on spring wheat but not on fall wheat. The damage cannot be determined until threshing is over, but the indication is that it reduced the yield by at least 15 per

cent. Scab was present to a limited extent on common varieties of barley grown in Iowa. The loss may be 1 or 2 per cent. (R. H. Porter, July).

REPORTS ON BARLEY STRIPE (HELMINTHOSPORIUM GRAMINEUM)

Wisconsin: Not serious except in a few cases. One report of 60 per cent loss in Polk County. The new Wisconsin introductions of smooth-awned selections Nos. 37 and 38 are very highly resistant. (R. E. Vaughan, July 25).

Minnesota: Barley stripe is more severe than it has been in many years. Many fields contain 5 to 20 per cent infection. (Section of Plant Pathology, July 1).

Iowa: Stripe was present in Velvet, Manchuria, Oderbrucker and in Mimsturdi varieties of barley this year. Percentages of infection ran as high as 20 in a few cases. (R. H. Porter, July).

LOOSE SMUT OF BARLEY (USTILAGO NUDA)

Wisconsin: More than usual. Losses reported up 20 per cent in two communities, 15 per cent in three communities, and 10 per cent in four communities. The average loss is 2 to 3 per cent. Smooth-awned selections seem to be especially susceptible. Hot water treatment not entirely satisfactory. Chemical treatments no good. (R. E. Vaughan, July 25).

Minnesota: As usual, 1 to 20 per cent infection in susceptible varieties. (Section of Plant Pathology, July 1).

Iowa: Loose smut was common on Velvet and on some hooded varieties in the experimental plots. It causes more damage in Iowa than the covered smut. (R. H. Porter, July).

REPORTS ON OAT SMUTS (USTILAGO SPP.)

Wisconsin: More than usual in untreated seed. (R. E. Vaughan, July 25).

Minnesota: About the same as usual. (Sect. Plant Path., July 1).

Iowa: A severe epidemic of oat smut occurred in Iowa this year due no doubt to the dry soil and moderately low temperatures which prevailed following the seeding time. The loss in 1931 from oat smut in Iowa will probably total 10 per cent. (R. H. Porter, July 14).

BACTERIAL WILT OF CORN PREVALENT IN IOWA

Bacterial wilt or Stewart's disease of corn (Bacterium stewarti) has been present in southeastern Iowa since 1928, but this year more reports have been received than in any previous season. It has been found principally on early varieties of sweet corn, in particular on a variety brought in from North Dakota. At Muscatine Mr. D. V. Layton found nearly 40 per cent of the plants infected in one field. Samples have been received from Linn, Muscatine, Lee, Jefferson, and Polk counties. In one case it was found on pop corn. (R. H. Porter, July 14).

OTHER REPORTS ON CEREAL DISEASES

WHEAT: Bunt (Tilletia spp.) in Wisconsin. Reported as slight from Ashland, Door, Green Lake, Ozaukee and Pierce Counties. Loss less than one per cent. Progress wheat more susceptible than other varieties. (R. E. Vaughan, July 25).

Black chaff (Bacterium translucens undulosum) in Iowa. This disease was prevalent on spring wheat at Kanawha in Hancock County. Some seasons one cannot find a trace of black chaff but this season it was present on at least 20 per cent of the heads in one field. (R. H. Porter, July).

RYE: Ergot (Claviceps purpurea) in Wisconsin. About as usual. Some in all fields. More noticeable on volunteer rye and where paths occur through fields causing delayed plant development. (R. E. Vaughan, July 25).

MARKET PATHOLOGY

DISCOLORATION OF NAPOLEON (ROYAL ANN) CHERRIES

By C. O. Bratley and F. S. Zimmerman

For several seasons it has been noted that the appearance of Napoleon cherries from California and the Northwest arriving on the New York market has been marred by the presence of darkened areas in the flesh of the fruit. Sometimes as many as three-fourths of the cherries on the surface of an otherwise perfect pack would be discolored.

The blemish appears as a translucent, rather watery brownish discoloration beneath the skin of the cherry. There is no definite line of demarkation between the affected and the healthy tissue. On the redder cherries of the variety the discoloration is in part masked by the normal color of the fruit. By cutting cherries which show varying amounts of the discoloration it was found that the initial darkening usually occurred about half way between the skin and the pit. Even in cherries showing considerable discoloration the epidermis and several layers of cells just beneath appeared normal.

The discoloration of the cherries in the face of the pack is due to pressure by the lid of the lug and is severe only when the pack showed too much bulge. In the interior of the pack the discoloration is found in cherries which have been pressed together in packing. An occasional cherry which has been dented in by its neighbors will be entirely black. In very loosely packed lugs the cherries next to the lid often exhibit a scalded appearance of the epidermis.

No marked difference in flavor between the sound and the bruised tissue could be detected. The cherries which were slightly bruised deteriorated no faster than uninjured fruit. However, the severely bruised fruit shriveled rapidly and were predisposed to decays caused by Cladosporium sp. and Alternaria sp.

To determine the amount of bruising necessary to induce the discoloration, several cherries were pressed lightly between two wooden strips. Generally, when a cherry was subjected to a pressure greater than four pounds the discoloration was produced. Within two hours after bruising the first discoloration appeared and the affected area continued to enlarge for the next twenty four hours. Fruit packed loosely in a wooden container and shaken lightly for ten minutes took on a scalded appearance.

MISCELLANEOUS NOTES

TOBACCO DISEASES IN PENNSYLVANIA

Black root rot (Thielavia basicola) of tobacco is prevalent in Lancaster County. Late plantings on low ground are chiefly affected. There is also much evidence of brown root rot (undet.). In general, the crop is uneven in growth throughout the region with

many very backward fields. Uneven seasonal rainfall has contributed much to the condition, excessive rainfall early in July causing the crop to develop shallow root systems. At present the crop is suffering from drought. (W. S. Beach, Aug. 8).

BACTERIAL BUDROT OF CANNA

Bacterial budrot of canna (Bacterium cannae) which has not occurred on the grounds of the Department of Agriculture in Washington, D. C., for several years, has reappeared this summer in two beds of a new variety, comprising one hundred plants, purchased this year from a commercial firm. Only two plants have not shown infection. Other varieties on the grounds are free from the disease. (Mary K. Bryan, Aug. 15).

TREE DISEASES IN NEW YORK

ELM: Serious defoliation of Ulmus americana in Warrensburg during July, caused by Gnomonia ulmea.

WHITE PINE: Heart rot of Pinus strobus caused by Lentinus lepideus in a few trees injured by lightning or breakage. (Walter H. Snell, Aug. 8).

S P E C I M E N S R E C E I V E D

Septobasidium pseudopedicellatum Burt on apple, near Athens, Georgia, J. H. Miller, July 15. Only on one tree near a stream. The crusts are all over the tree, branches and trunk.

Cercospora brachypus Ell. & Ev. on grape, Butlers Island, Georgia, June 21 and July 25, J. H. Miller.

Polyporus pocula Sg. ex B. & C. on dead bark of Castanea dentata, Neal's Gap, Georgia, July 16, J. H. Miller. Very rare.

Corticium vagum B. & C. on Crotalaria incana, Experiment Station, Columbia, South Carolina, July 29, Roland McKee. Determined by Edith K. Cash and Anna E. Jenkins.

Aphelenchus olesistus Ritzema Bos on leaves of Begonia melior, nursery near Ithaca, New York, Carl E. Guterman, July 10. Det. G. Steiner.